

CLAIMS

1. A high refractive index layer comprising a matrix and fine particles of a high refractive index composite oxide, wherein the fine particles of a high refractive index composite oxide are fine particles of a composite oxide containing: a titanium element; and at least one metal element, in which the oxide of the at least one metal element has a refractive index of 1.95 or more, and

the composite oxide is doped with at least one metal ion selected from the group consisting of Co ion, Zr ion and Al ion.

2. The high refractive index layer as described in claim 1, wherein the fine particles of a high refractive index composite oxide are surface-treated with at least one compound of an inorganic compound and an organic compound.

3. The high refractive index layer as described in claim 1 or 2, wherein the matrix contains a cured product of at least one member selected from the group consisting of an organic binder, an organometallic compound and a partial hydrolyzate thereof.

4. The high refractive index layer as described in

any one of claims 1 to 3, which has a refractive index of 1.75 to 2.4.

5. The high refractive index layer as described in any one of claims 1 to 4, which is formed from a composition obtained by dispersing particles of the high refractive index composite oxide using a dispersing agent, in which the dispersing agent is a compound having at least one anionic group selected from the group consisting of a carboxyl group, a sulfo group, a phosphono group and an oxyphosphono group.

6. The high refractive index layer as described in claim 5, wherein the dispersing agent is a compound containing a cross-linkable or polymerizable functional group.

7. An antireflection film comprising: a transparent support; the high refractive index layer described in any one of claims 1 to 6; and a low refractive index layer having a refractive index of less than 1.55, in this order.

8. An antireflection film comprising a transparent support; two layers of the high refractive index layers described in any one of claims 1 to 6 and different from each other in refractive index; and a low refractive index layer having a refractive index of less than 1.55, in this order.

9. The antireflection film as described in claim 7 or 8, which further comprises a hard coat layer between the transparent support and the high refractive index layer.

10. A polarizing plate comprising a polarizing film and a protective film thereof, wherein the protective film is the antireflection film described in any one of claims 7 to 9.

11. A polarizing plate comprising a polarizing film and protective films thereof, wherein one of the protective films is the antireflection film described in any one of claims 7 to 9, and the other protective film is an optically compensation film having an optical anisotropy.

12. The polarizing plate as described in claim 11, wherein said optically compensation film comprises a transparent support and an optically compensation layer including an optically anisotropic layer, the optically anisotropic layer containing a compound having a discotic structural unit, in which the disc plane of the discotic structural unit is inclined to the transparent support plane, and the angle between the disc plane and the transparent support plane is varied in the depth direction of the optically

anisotropic layer.

13. An image display device comprising, on the image display surface, the antireflection film described in any one of claims 7 to 9 or the polarizing plate described in any one of claim 10 to 12.

14. A process for producing a curable coating composition comprising a film-forming curable compound and fine particles of a high refractive index composite oxide, in which the fine particles of a high refractive index composite oxide contains: a bismuth element; and at least one metal element, in which the oxides of the at least one metal element has a refractive index of 1.95 or more,

wherein the process comprises wet-dispersing particles of the high refractive index composite oxide and a dispersing agent using media having an average particle size of less than 1 mm to thereby produce fine particles of high refractive index composite oxide having an average particle size of 150 nm or less.

15. The process as described in claim 14, wherein said dispersing agent is a polymer dispersing agent having a polar group.

16. The process as described in claim 15, wherein said polar group is an at least one anionic group selected from the group consisting of a carboxyl group, a sulfo group, a phosphono group and oxyphosphono group.

17. The process as described in claim 15 or 16, wherein said dispersing agent is a compound having a cross-linkable or polymerizable functional group.

18. The process as described in any one of claims 14 to 17, wherein said film-forming curable compound is at least one of a curable organic binder, an organometallic compound and a partial hydrolyzate thereof.

19. A cured film which has a refractive index of 1.85 to 2.5 and is formed from a curable coating composition containing a film-forming curable compound and fine particles of a high refractive index composite oxide having an average particle size of 100 nm or less, the fine particles of a high refractive index composite oxide containing: a bismuth element; and at least one metal element, in which the oxide of the at least one metal element has a refractive index of 1.95 or more.

20. An antireflection film comprising: a transparent support; the cured film described in claim 19; and a low

refractive index layer having a refractive index of less than 1.55, in this order.

21. An antireflection film comprising: a transparent support; two layers of the cured films described in claim 19 and different from each other in refractive index; and a low refractive index layer having a refractive index of less than 1.55, in this order.

22. The antireflection film as described in claim 20 or 21, which further comprises a hard coat layer between the transparent support and the cured film.

23. A polarizing plate comprising a polarizing film and a protective film thereof, wherein the protective film is the antireflection film described in any one of claims 20 to 22.

24. A polarizing plate comprising a polarizing film and protective films thereof, wherein one of the protective films is the antireflection film described in any one of claims 20 to 22 and the other protective film is an optically compensation film having an optical anisotropy.

25. The polarizing plate as described in claim 24,

wherein said optically compensation film comprises a transparent support and an optically compensation layer including an optically anisotropic layer, the optically anisotropic layer containing a compound having a discotic structural unit, in which the disc plane of the discotic structural unit is inclined to the transparent support plane, and the angle between the disc plane and the transparent support plane is varied in the depth direction of the optically anisotropic layer.

26. An image display device comprising, on the image display surface, the antireflection film described in any one of claims 20 to 22 or the polarizing plate described in any one of claims 23 to 25.